

What is claimed is:

1. A semiconductor device, comprising:  
a semiconductor substrate;  
at least one of a protruding electrode and wiring formed  
5 on one surface of the semiconductor substrate; and  
a first resin film formed on the one surface of the  
semiconductor substrate,  
wherein the first resin film has elasticity low enough  
to reduce stress induced by a difference in thermal expansion  
10 coefficient between the semiconductor substrate and the first  
resin film.
2. The semiconductor device according to Claim 1, wherein  
an elastic modulus of the first resin film is 15 GPa or lower.  
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3. The semiconductor device according to Claim 1, wherein  
a second resin film having one of higher elasticity and higher  
strength than the first resin film is formed on the other surface  
of the semiconductor substrate.  
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4. The semiconductor device according to Claim 3, wherein  
an elastic modulus of the second resin film is 15 GPa or higher.
5. The semiconductor device according to Claim 1, wherein  
25 the semiconductor substrate has a thickness of 550  $\mu\text{m}$  or less.

6. The semiconductor device according to Claim 3, wherein the semiconductor substrate has a thickness of 200  $\mu\text{m}$  or less and is placed at a center of the semiconductor device in a thickness direction of a cross section thereof.

7. A method of manufacturing a semiconductor device, comprising:

a step of forming at least one of a protruding electrode and wiring on one surface of a semiconductor substrate;

a step of forming a first resin film on the semiconductor substrate on the one surface on which at least one of the protruding electrode and the wiring is formed, the first resin film having elasticity low enough to reduce stress induced by a difference in thermal expansion coefficient between the semiconductor substrate and the first resin film;

a grinding step of reducing the semiconductor substrate in thickness through one of polishing and grinding of the other surface of the semiconductor substrate;

a step of forming a second resin film on the other surface subsequent to the grinding step, the second resin film having one of higher elasticity and higher hardness than the first resin film; and

a step of cutting the semiconductor substrate into individual pieces after the second resin film is formed.

8. A semiconductor device, comprising:

a semiconductor chip;

an electrode pad formed on the semiconductor chip;

5 a resin film formed to cover a surface of the semiconductor chip; and

a post bonded to the electrode pad and provided to penetrate through the resin film, a portion of which in close proximity to a junction portion with the electrode pad is made  
10 of gold.

9. The semiconductor device according to Claim 8, wherein the post includes a portion made of a metal material other than gold.

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10. The semiconductor device according to Claim 8, wherein the post includes a junction portion provided on a side of the electrode pad and made of gold, a tip end portion provided on a side of a tip end and made of gold, and an intermediate portion  
20 provided between the junction portion and the tip end portion and made of a metal material other than gold.